



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,876	01/23/2004	Abraham J. Domb	PG 102	6009
23579	7590	10/04/2007	EXAMINER	
PATREA L. PABST			FUBARA, BLESSING M	
PABST PATENT GROUP LLP			ART UNIT	PAPER NUMBER
400 COLONY SQUARE, SUITE 1200			1618	
1201 PEACHTREE STREET				
ATLANTA, GA 30361				
MAIL DATE		DELIVERY MODE		
10/04/2007		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/763,876	DOMB, ABRAHAM J.	
	Examiner	Art Unit	
	Blessing M. Fubara	1618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 26 July 2007.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-10 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

DETAILED ACTION

Examiner acknowledges receipt of response to Election/Restriction requirement, amendment and remarks filed 7/26/07. Claims 11-14 are canceled. Claims 1-10 are pending.

Election/Restrictions

1. Applicant's election with traverse of claims 1-10, Group I, in the reply filed on 7/26/07 is acknowledged. The traversal is on the ground(s) that when the claimed composition is placed in aqueous medium, such as buffer solution or tissue or biological medium, the viscosity of the composition increases leading to extended release so that applicant opines that the citation of Denovan is irrelevant because the examiner has the burden of showing that the inventions of the two groups are distinct; and as for Groups I and III, applicant traversal is based on the asservion that the examiner did not meet the burden of showing distinctiveness between the inventions of Groups I and III. This is not found persuasive because Denovan was used to show that the method of treating a patient in need of treatment as claimed in Group II invention can be practiced by using a composition that is different from the composition of claim 1 and for at least that reason, restriction was shown to be proper and in that wise the examiner met the burden of showing that Group II and I are distinct. Secondly, as it regards Group III and I, the reason that the product as claimed can be made by materially different process is adequate reason that the two groups are properly restricted and here also, the examiner met the burden. However, in spite of the arguments and the response tendered by the examiner, it is noted with appreciation that applicant has canceled claims 11-14 with a reservation to pursuing the canceled subject matter at a later date.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-9 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for paclitaxel, cisplatin and/or carboplatin, does not reasonably provide enablement for biologically active agent or small drug molecules. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. This is scope of enablement.

5. Claims 1-3 and 7-10 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for ricinoleic acid and dimer erucic acid, dimer oleic acid and non-linear fatty acid-ester derivatives of ricinoleic acid, fumarate or succinate as the dicarboxylic acids, does not reasonably provide enablement for all fatty acids and all dicarboxylic acids. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. This is scope of enablement.

Enablement is considered in view of the Wands factors (MPEP 2164.01(a)). The court in Wands states: "Enablement is not precluded by the necessity for some experimentation such as

routine screening. However, experimentation needed to practice the invention must not be undue experimentation. The key word is 'undue,' not 'experimentation.' " (*Wands*, 8 USPQ2d 1404).

Clearly, enablement of a claimed invention cannot be predicated on the basis of quantity of experimentation required to make or use the invention. "Whether undue experimentation is needed is not a single, simple factual determination, but rather is a conclusion reached by weighing many factual considerations." (*Wands*, 8 USPQ2d 1404). The factors to be considered in determining whether undue experimentation is required include: (1) the quantity of experimentation necessary, (2) the amount or direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims. While all of these factors are considered, a sufficient number of the above factors are considered below for a *prima facie* case.

1) Nature of the invention.

The nature of the invention is composition comprising ester or ester-anhydride and where the polymer is formed from an unsaturated fatty acid and at least one alkane-dicarboxylic acid or alkyl hydroxyl acid and a biological agent.

2) State of the prior art and the predictability or lack thereof in the art.

There are many biologically active agents and applicant's enabled disclosure is limited to those biologically active agents named above. Similarly, the fatty acid that is enabled is ricinoleic acid.

There is no predictability even in view of the seemingly high level of skill in the art regarding biologically active agent, small drug molecule and fatty acid, that all fatty acids and all biologically active agents would form ester anhydride bond with any/all dicarboxylic acids. The

existence of these obstacles establishes that the contemporary knowledge in the art would prevent one of ordinary skill in the art from practicing the full scope of the claimed invention. The instant claimed invention is highly unpredictable as discussed below:

It is noted that the pharmaceutical art is unpredictable, requiring each embodiment to be individually assessed for physiological activity. *In re Fisher*, 427 F.2d 833, 166 USPQ 18 (CCPA 1970) indicates that the more unpredictable an area is, the more specific enablement is necessary in order to satisfy the statute.

3) Quantity of experimentation needed to make or use the invention based on the content of the disclosure.

The quantity of experimentation needed is undue experimentation. One of ordinary skill in the art would first need to determine with some degree of certainty the reactivity of fatty acids and dicarboxylic acid that would provide the desired carrier for all the all biologically active agents.

4) Level of predictability in the art.

While chemical reactions are accompanied with a high level of predictability, there is no full predictability that all fatty acids would react with dicarboxylic acids because of the vast array of dicarboxylic acids, known and yet to be discovered, and same is true for fatty acids and then the encapsulability of all biologically active agents with the polymer.

5) Amount of direction and guidance provided by the inventor.

The amount of direction or guidance present is drawn paclitaxel, cisplatin and/or carboplatin for the biologically agents; ricinoleic acid for the fatty acids and dimer erucic acid, dimer oleic acid and non-linear fatty acid-ester derivatives of ricinoleic acid, fumarate or

Art Unit: 1618

succinate as the dicarboxylic acids. The recitation of the broad categories of drugs, namely, "antibacterial," "anti-inflammatory," "anticancer agents," "antidepressants," "analgesics" and "local anesthetics" is an invitation to experiment with all species of the broad categories since the specification does not identify groups of drugs that are members of the broad categories except for paclitaxel, cisplatin and carboplatin for the anticancer agents.

6) Breadth of claims.

The protection sought is broader than the enabling disclosure for the biologically active agents, fatty acids and dicarboxylic acids.

It is noted that the specification must teach those of skill in the art how to make and how to use the invention as broadly claimed. In re Goodman, 29 USPQ2d at 2013 (Fed. Cir. 1994), citing In re Vaeck, 20 USPQ2d at 1445 (Fed. Cir. 1991). The courts have stated that reasonable correlation must exist between scope of exclusive right to patent application and scope of enablement set forth in patent application. 27 USPQ2d 1662 *Ex parte Maizel*.

Scope of Enablement is considered in view of the Wands factors (MPEP 2164.01 (a)). In view of the quantity of experimentation necessary to determine the parameters listed above, the lack of direction or guidance provided by the specification, the scope of the protection sought may be brought into conformity with the scope of the enabled disclosure.

6. Claims 2 and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The boundaries of “ester derivatives of ricinoleic acid” and “small drug molecules” are not defined.

It is noted that the specification at paragraph[0049] says that an example of non-linear fatty acid derivative is ricinoleic acid.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 2-7 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Teomim et al. (“Ricinoleic acid-based biopolymers” in the Journal of Biomedical Materials Research, Vol. 45, Issue 3, pages 258-267, John Wiley & Sons, Inc.) or Domb et al. (“Biopolymers as drug carriers and bioactive macromolecules” in Acta Polymerica, 14 Dec. 1998, Volume 49, Issue 10-11 , Pages 526 – 533).

Teomim discloses ricinoleic passed biopolymer derived from ricinoleic acid and maleic or succinic anhydride for the delivery of methotrexate, an anticancer agent (pages 258-267). The methotrexate meets claims 2 and 10. Ricinoleic acid meets the requirements of claims 1, 4, 5 and 8. The succinic anhydride or succinate meets claim 6. Since the composition of Teomim is the same composition as the composition in claim 1, it flows that the composition of Teomim would also be “suitable for administration by injection” as recited in claim 3.

Domb described biodegradable polyanhydrides derived from ricinoleic acid and sebacic acid as drug carriers with nystatin, amphotericin B are small molecule drugs disclosed in

Art Unit: 1618

the manuscript (pages 526-533). Since the composition of Domb is the same composition as the composition in claim 1, it flows that the composition of Domb would also be "suitable for administration by injection" as recited in claim 3.

9. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Domb (US 5,171,812).

Domb discloses polyanhydride derived from fatty acid derivatives such as dimers and trimers of oleic acid, erucic acid, ricinoleic acid and diacids or triacids such as fumaric acid, isocrotonic acid and acrylic acid (column 4, lines 26-43) as carriers for drugs (column 5, lines 48 and 49).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Teomim et al. ("Ricinoleic acid-based biopolymers" in the Journal of Biomedical Materials Research, Vol. 45, Issue 3, pages 258-267, John Wiley & Sons, Inc.) or Domb et al. ("Biopolymers as drug carriers and bioactive macromolecules" in Acta Polymerica, 14 Dec. 1998, Volume 49, Issue 10-11, Pages 526 – 533).

Teomim and Domb are discussed above as meeting the requirements of claim 1. Each of the references does not disclose the recited %amount of the ricinoleic acid relative to the polymer. It would be obvious to use amount of the ricinoleic acid relative to the polymer that

Art Unit: 1618

would produce the desired polymer that would provide the desired release of the active agent, and in the absence of factual showing, the recited %amount of the ricinoleic acid is not inventive over a prior art reference that describes the same composition that is used as drug carrier and that is silent on the amount of the fatty acid.

12. Claims 1 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Teomim et al. ("Ricinoleic acid-based biopolymers" in the Journal of Biomedical Materials Research, Vol. 45, Issue 3, pages 258-267, John Wiley & Sons, Inc.) or Domb et al. ("Biopolymers as drug carriers and bioactive macromolecules" in Acta Polymerica, 14 Dec. 1998, Volume 49, Issue 10-11, Pages 526 – 533).

Teomim and Domb are described above as anticipating claim 1. Both Domb and Teomim are silent on the particulate nature of the composition. It is known in the art that particles used as drug carriers have the advantage of high stability, high carrier capacity in view of the large surface area, possibility of incorporation of hydrophobic and hydrophilic substances, capacity for sustained release and ability for use in variable routes of administration including oral, parenteral and inhalation, all of which aid bioavailability and uptake of active substances by the target sites. Therefore, it would be obvious to prepare the composition of Domb or Teomim in particulate form, microparticle or nanoparticle, with the expectation of deriving the advantages of the use of particles in drug delivery.

Double Patenting

13. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined

application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

14. Claims 1-10 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 57-61, 64, 65, 73-77 and 79-81 of copending Application No. 10/433,143. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 57-61, 64, 65, 73-77 and 79-81 taken together teach a drug delivery composition that comprises a polymer containing ester or amide bonds and derived from fatty acid such as ricinoleic acid and dicarboxylic acid in the form suitable for injection and the polymer comprises 70% w/w ricinoleic acid (copending claim 64). Regarding claim 9, it would be obvious to formulate the composition as particles in order to derive the benefits of use of particle formulation such as high stability, high carrier capacity in view of the large surface area, possibility of incorporation of hydrophobic and hydrophilic substances, capacity for sustained release and ability for use in variable routes of administration including oral, parenteral and inhalation, all of which aid bioavailability and uptake of active substances by the target sites.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blessing M. Fubara whose telephone number is (571) 272-0594. The examiner can normally be reached on 7 a.m. to 5:30 p.m. (Monday to Thursday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Hartley can be reached on (571) 272-0616. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Blessing Fubara
Patent Examiner
Tech. Center 1600

